

科目：普通生物學

系組：公共衛生學系

年級：二

I、選擇題 (60%) 每題 2 分

- You would like to lose weight. Which of the following should be your preferred food group?
(A) Lactose and glucose (B) Sucrose and starch
(C) Starch and fructose (D) Cellulose and fructose
- The relationship between catabolism and anabolism is most similar to the relationship between which of the following pairs of terms?
(A) exergonic; spontaneous (B) exergonic; endergonic
(C) free energy; entropy (D) work; free energy
- One organelle, called a _____, contains enzymes that digest worn out parts of cells.
(A) lysosome (B) peroxisome (C) vesicle (D) endoplasmic reticulum
- Which of the following is **NOT** true of enzyme behavior?
(A) Enzyme shape may change during catalysis.
(B) The active site of an enzyme orients its substrate molecules, thereby promoting interaction of their reactive parts.
(C) All enzymes have an active site where substrates are temporarily bound.
(D) Each enzyme can catalyze a wide variety of different reactions.
- When a cell membrane engulfs fluid droplets it is called:
(A) diffusion (B) receptor-mediated endocytosis
(C) pinocytosis (D) phagocytosis
- Which of the following statements is **false**?
(A) Chromosomes do not pair during mitosis.
(B) Genes and chromosomes are duplicated during prophase.
(C) Each species has a specific number of chromosomes.
(D) New nuclei are formed during telophase.
- In bacteria, DNA will be found in _____.
(A) a membrane-enclosed nucleus (B) mitochondria
(C) the nucleoid (D) ribosomes
- A cell with a predominance of rough endoplasmic reticulum is most likely _____.
(A) producing large quantities of proteins for secretion
(B) producing large quantities of proteins in the cytosol
(C) producing large quantities of carbohydrates to assemble an extensive cell wall matrix
(D) producing large quantities of carbohydrates for storage in the vacuole

※ 注意：1. 考生須在「彌封答案卷」上作答。

2. 本試題紙空白部份可當稿紙使用，試題須隨答案卷繳回。

3. 考生於作答時可否使用計算機、法典、字典或其他資料或工具，以簡章之規定為準。

科目：普通生物學

系組：公共衛生學系

年級：二

9. Cells from advanced malignant tumors often have very abnormal chromosomes and an abnormal number of chromosomes. What might explain the association between malignant tumors and chromosomal abnormalities?
- (A) Cancer cells are no longer density-dependent.
 - (B) Cancer cells are no longer anchorage-dependent.
 - (C) Cell cycle checkpoints are not in place to stop cells with chromosome abnormalities.
 - (D) Transformation introduces new chromosomes into cells.
10. Which of the following statements about a G protein signaling pathway is true?
- (A) A G protein-coupled receptor bound to GTP is in its active state.
 - (B) A G protein bound to GTP is in its active state.
 - (C) A G protein bound to GDP is in its active state.
 - (D) Hydrolysis of bound GTP by a G protein activates the G protein.
11. Early geneticists demonstrated all of the following about inherited traits **Except**
- (A) traits can be masked in some generations, but subsequently reappear unchanged in future generations.
 - (B) traits segregate among the offspring of a cross.
 - (C) certain traits are more likely to be represented than their alternatives.
 - (D) all traits breed true.
12. Replication of DNA is
- (A) conservative.
 - (B) redundant.
 - (C) dispersive.
 - (D) semiconservative.
13. The number of nucleotides required to specify an amino acid is
- (A) 1. (B) 2. (C) 3. (D) 4.
14. Most genetic engineering experiments include four stages. Which of the following is **not** one of them?
- (A) cleaving the source DNA
 - (B) production of recombinant DNA
 - (C) cloning copies of the recombinants
 - (D) integration of the entire bacterial chromosome

※ 注意：1. 考生須在「彌封答案卷」上作答。

2. 本試題紙空白部份可當稿紙使用，試題須隨答案卷繳回。

3. 考生於作答時可否使用計算機、法典、字典或其他資料或工具，以簡章之規定為準。

科目：普通生物學

系組：公共衛生學系

年級：二

15. The gene pool includes
(A) all of the fitness within a population.
(B) all of the individuals within a population.
(C) all of the alleles of genes within a population.
(D) all of the adaptations within a population.
16. Evidence for evolution can be obtained by examining presently existing species through studies on each of the following except one. Select the **exception**.
(A) analogous structures (B) vestigial structures
(C) patterns of distribution (D) early development
17. Viruses are characterized by all of the following except
(A) being found in every organism investigated so far.
(B) being specific to the hosts they infect.
(C) being capable of independent reproduction.
(D) having either a helical or isometric structure.
18. In all of the following characteristics, prokaryotes differ from eukaryotes **Except** in
(A) chromosomes
(B) multicellularity.
(C) organelles
(D) nucleic acids as the hereditary material.
19. Which of the following are the fundamental embryonic tissues called the "germ layers"?
(A) tissues, organs, and organ systems
(B) mesoderm, endoderm, and ectoderm
(C) ectoderm, endoderm, and exoskeleton
(D) mesoderm, muscle, and tissue
20. The nervous system that regulates activity in smooth muscle, cardiac muscle, and glands of the body is referred to as the _____ system.
(A) antagonistic (B) autonomic (C) sympathetic (D) parasympathetic
21. The main ion channel responsible for the action potential is
(A) the voltage-gated sodium channel.
(B) the voltage-gated potassium channel.
(C) the ligand-gated sodium channel.
(D) the ligand-gated potassium channel.

※ 注意：1. 考生須在「彌封答案卷」上作答。

2. 本試題紙空白部份可當稿紙使用，試題須隨答案卷繳回。

3. 考生於作答時可否使用計算機、法典、字典或其他資料或工具，以簡章之規定為準。

科目：普通生物學

系組：公共衛生學系

年級：二

22. Only certain organs called the target organs respond to the presence of a specific hormone because
- (A) only those organs are attached to the endocrine gland.
 - (B) only those organ cells have the appropriate receptors.
 - (C) only those organs allow the hormone to enter their cells.
 - (D) they are the first organs along the hormone's circulatory path.
23. All of the following statements about exoskeletons are correct **Except**
- (A) exoskeletons are made of chitin.
 - (B) muscles are attached to the exoskeleton.
 - (C) exoskeletons do not limit growth because they are flexible.
 - (D) exoskeletons are shed by many arthropods in a process called molting.
24. In what way are essential amino acids similar to humans?
- (A) They are derived from the same precursor molecules.
 - (B) Both are integral parts of enzymes.
 - (C) They cannot be synthesized and must be ingested.
 - (D) Both are needed to synthesize steroid hormones.
25. Why is the stomach acidic?
- (A) to kill bacteria
 - (B) to digest proteins
 - (C) to hold water
 - (D) to breakdown starch
26. All of the following are functions of the circulatory system **Except**
- (A) oxygen, nutrient, and waste transport.
 - (B) synthesis of red and white blood cells.
 - (C) blood clotting and immune defense.
 - (D) temperature regulation.
27. Vertebrate urine production involves
- I-using the higher blood pressure to push water through a filter, along with water, small molecules pass into the filtrate.
 - II-cells and proteins are retained in the blood, water is reabsorbed as the filtrate is passing through a long tube.
 - III-ammonia produced as the metabolic breakdown is excreted.
- (A) just I (B) just II (C) I and II (D) II and III

※ 注意：1. 考生須在「彌封答案卷」上作答。

2. 本試題紙空白部份可當稿紙使用，試題須隨答案卷繳回。

3. 考生於作答時可否使用計算機、法典、字典或其他資料或工具，以簡章之規定為準。

科目：普通生物學

系組：公共衛生學系

年級：二

3. How are cancer cells different from normal cells? (4%)
4. Evolution of a body cavity is important for several reasons. List three. (6%)
5. Explain the protective functions of the vertebrate circulatory system. (4%)
6. Which organ detects and releases which hormone to changes in blood glucose levels? (4%)
7. Why does the body often respond to an infection with a fever? (4%)
8. The gene for ABO blood type encodes an enzyme that adds sugar molecules to lipids on the surface of red blood cells. (2%)
True False
9. Bacteria reproduce by meiosis. (2%)
True False

※ 注意：1. 考生須在「彌封答案卷」上作答。

2. 本試題紙空白部份可當稿紙使用，試題須隨答案卷繳回。

3. 考生於作答時可否使用計算機、法典、字典或其他資料或工具，以簡章之規定為準。

科目：普通化學

系組：公共衛生學系

年級：二

I、單選題，每題二分，答錯不倒扣。(80分)

1. Naturally occurring bromine consists of two isotopes: bromine-79 and bromine-81. The atomic mass for bromine is approximately 80. What are reasonable estimates of the relative percentages of bromine-79 and bromine-81 respectively?

- A) 10, 90
- B) 25, 75
- C) 50, 50
- D) 75, 25
- E) 90, 10

2. Adipic acid contains 49.32% C, 43.84% O, and 6.85% H by mass. What is the empirical formula?

- A) $C_3H_5O_2$
- B) $C_3H_3O_4$
- C) C_2HO_3
- D) $C_2H_5O_4$
- E) C_3HO_3

3. In the reaction shown below, what species is oxidized?



- A) Na^+
- B) I^-
- C) Br_2
- D) Br^-
- E) I_2

4. Which one of the following substances, when dissolved in water at equal molar concentrations, will give lowest electrical conductivity?

- A) $CaCl_2$
- B) HNO_3
- C) NH_3
- D) $C_6H_{12}O_6$ (glucose)
- E) CO_2

5. Which of the following is a weak acid?

- A) H_2SO_4
- B) HNO_3
- C) HF
- D) HBr
- E) HCl

※ 注意：1. 考生須在「彌封答案卷」上作答。

2. 本試題紙空白部份可當稿紙使用，試題須隨答案卷繳回。

3. 考生於作答時可否使用計算機、法典、字典或其他資料或工具，以簡章之規定為準。

科目：普通化學

系組：公共衛生學系

年級：二

6. Consider four identical 1.0-L flasks containing the following gases each at 25°C and 1 atm pressure. Which gas has the highest density?

- A) O₂
- B) H₂
- C) NH₃
- D) SO₂
- E) same for all gases

7. Which one of the following equations represents the formation reaction of CH₃OH(l)?

- A) $C(g) + 2H_2(g) + \frac{1}{2}O_2(g) \rightarrow CH_3OH(l)$
- B) $C(g) + 4H(g) + O(g) \rightarrow CH_3OH(l)$
- C) $C(\text{graphite}) + 4H(g) + O(g) \rightarrow CH_3OH(l)$
- D) $C(\text{diamond}) + 4H(g) + O(g) \rightarrow CH_3OH(l)$
- E) $C(\text{graphite}) + 2H_2(g) + \frac{1}{2}O_2(g) \rightarrow CH_3OH(l)$

8. Which of the following is a correct set of quantum numbers for an electron in a 3d orbital?

- A) $n = 3, l = 0, m_l = -1$
- B) $n = 3, l = 1, m_l = +3$
- C) $n = 3, l = 2, m_l = 3$
- D) $n = 3, l = 3, m_l = +2$
- E) $n = 3, l = 2, m_l = -2$

9. Which of the following elements has the largest second ionization energy (IE₂)?

- A) Li
- B) B
- C) O
- D) F
- E) Na

10. In which of these substances are the atoms held together by polar covalent bonding?

- A) SrCl₂
- B) CsCl
- C) ClF
- D) TiF₂
- E) S₈

※ 注意：1. 考生須在「彌封答案卷」上作答。

2. 本試題紙空白部份可當稿紙使用，試題須隨答案卷繳回。

3. 考生於作答時可否使用計算機、法典、字典或其他資料或工具，以簡章之規定為準。

科目：普通化學

系組：公共衛生學系

年級：二

11. How many valence electrons are shown in the Lewis structure of H_3O^+ ?

- A) 7
- B) 8
- C) 9
- D) 10
- E) 11

12. The electron pair geometry around the central iodine in I_3^- is

- A) linear
- B) trigonal bipyramidal
- C) tetrahedral
- D) octohedral
- E) none of these

13. Which of the following molecules contains polar bonds but is nonpolar?

- A) CH_2Cl_2
- B) F_2
- C) H_2O
- D) NH_3
- E) CCl_4

14. The hybridization of the central atom in NO_3^- is

- A) p^3
- B) sp^2
- C) sp^3
- D) sp
- E) dsp^2

15. Which one of the following molecules and ions will have a planar geometry?

- A) PCl_3
- B) BF_4^-
- C) XeF_4
- D) BrF_5
- E) H_3O^+

※ 注意：1. 考生須在「彌封答案卷」上作答。

2. 本試題紙空白部份可當稿紙使用，試題須隨答案卷繳回。

3. 考生於作答時可否使用計算機、法典、字典或其他資料或工具，以簡章之規定為準。

科目：普通化學

系組：公共衛生學系

年級：二

16. How many sigma (σ) bonds and pi (π) bonds are in carbon dioxide?

- A) three σ , zero π
- B) two σ , one π
- C) two σ , two π
- D) one σ , two π
- E) zero σ , three π

17. Which of the following substances would be most polar?

- A) NH_3
- B) CF_4
- C) BF_3
- D) CO_2
- E) CH_3CH_3

18. The strongest intermolecular interactions between hydrogen fluoride (HF) molecules arise from

- A) dipole-dipole forces
- B) London dispersion forces
- C) hydrogen bonding
- D) ion-dipole interactions
- E) ionic bonds.

19. Select the weakest electrolyte from the following set.

- A) Na_2SO_4
- B) KCl
- C) $\text{CH}_3\text{CH}_2\text{COOH}$, propionic acid
- D) CaCl_2
- E) LiOH

20. Saccharin, one of the first non-nutritive sweeteners used in soft-drinks, is 500 times sweeter than sugar in dilute aqueous solutions. The solubility of saccharin is 1.00 gram per 290 mL of solution. What is the molarity of a saturated saccharin solution? ($M_{\text{saccharin}} = 183.2 \text{ g/mol}$)

- A) 0.0188 M
- B) 0.632 M
- C) 1.58 M
- D) 3.45 M
- E) None of these choices is correct

※ 注意：1. 考生須在「彌封答案卷」上作答。

2. 本試題紙空白部份可當稿紙使用，試題須隨答案卷繳回。

3. 考生於作答時可否使用計算機、法典、字典或其他資料或工具，以簡章之規定為準。

科目：普通化學

系組：公共衛生學系

年級：二

21. What intermolecular force or bond is primarily responsible for the solubility of carbon dioxide (CO_2) in water?

- A) dipole/dipole force
- B) hydrogen bonding
- C) dipole/induced dipole force
- D) hydrogen bonding-dipole force
- E) ion-induced dipole force

22. Lithium chloride crystallizes in a face-centered cubic unit cell with chloride ions occupying the lattice points and lithium ions occupying octahedral holes. How many chloride ions surround each lithium ion in LiCl ?

- A) 1
- B) 4
- C) 6
- D) 8
- E) 12

23. Which of the following would have the lowest vapor pressure at 0°C ?

- A) CH_4
- B) CH_2Cl_2
- C) NH_3
- D) CH_3OCH_3
- E) CH_3OH

24. Which of the following solutions has the lowest freezing point?

- A) 1.0 m glucose in water
- B) 1.0 m NaCl in water
- C) 1.0 m Na_2SO_4 in water
- D) 1.0 m NaHSO_4 in water
- E) pure water

25. The following data were obtained at 25°C :

$[\text{A}]_0$	$[\text{B}]_0$	$[\text{C}]_0$	Rate
0.1	0.2	0.3	0.063
0.3	0.4	0.2	0.084
0.6	0.4	0.2	0.168
0.3	0.4	0.1	0.021
0.6	0.2	0.2	0.168

What is the correct rate law?

- A) $\text{Rate} = k[\text{A}][\text{B}][\text{C}]$
- B) $\text{Rate} = k[\text{A}][\text{B}][\text{C}]^2$
- C) $\text{Rate} = k[\text{A}][\text{C}]$
- D) $\text{Rate} = k[\text{A}]^3[\text{B}]^2[\text{C}]$
- E) $\text{Rate} = k[\text{A}][\text{C}]^2$

※ 注意：1. 考生須在「彌封答案卷」上作答。

2. 本試題紙空白部份可當稿紙使用，試題須隨答案卷繳回。

3. 考生於作答時可否使用計算機、法典、字典或其他資料或工具，以簡章之規定為準。

科目：普通化學

系組：公共衛生學系

年級：二

26. A particular first-order reaction has a rate constant of 0.0107 s^{-1} . What is the half-life for this reaction?
- A) 1.00 s
B) 64.6 s
C) 93.2 s
D) 0.0155 s
E) 0.0107 s
27. Ethane can be formed by reacting acetylene with hydrogen.
 $\text{C}_2\text{H}_2(\text{g}) + 2\text{H}_2(\text{g}) \rightleftharpoons \text{C}_2\text{H}_6(\text{g}) \Delta H^\circ_{\text{rxn}} = -311 \text{ kJ}$
Under which reaction conditions would you expect to have the greatest equilibrium yield of ethane?
- A) high temperature, high pressure
B) low temperature, high pressure
C) high temperature, low pressure
D) low temperature, low pressure
E) None of these choices is correct, unless a catalyst is present.
28. Which one of the following substances will give an aqueous solution of $\text{pH} < 7$?
- A) KI
B) NH_4Br
C) Na_2CO_3
D) CH_3COONa
E) CH_3OH
29. Which of the following species cannot act as a Lewis base?
- A) O^{2-}
B) OH^-
C) CH_4
D) H_2S
E) NH_3
30. When a strong acid is titrated with a weak base, the pH at the equivalence point
- A) is greater than 7.0
B) is equal to 7.0
C) is less than 7.0
D) is equal to the $\text{p}K_a$ of the acid
E) is equal to the $\text{p}K_b$ of the base

※ 注意：1. 考生須在「彌封答案卷」上作答。

2. 本試題紙空白部份可當稿紙使用，試題須隨答案卷繳回。

3. 考生於作答時可否使用計算機、法典、字典或其他資料或工具，以簡章之規定為準。

科目：普通化學

系組：公共衛生學系

年級：二

31. Equal volumes of the following pairs of solutions are mixed. Which pair will produce a buffer solution?

- A) $0.10 \text{ mol L}^{-1} \text{ HCl}$ and $0.05 \text{ mol L}^{-1} \text{ NaOH}$
B) $0.10 \text{ mol L}^{-1} \text{ HCl}$ and $0.15 \text{ mol L}^{-1} \text{ NH}_3$
C) $0.10 \text{ mol L}^{-1} \text{ HCl}$ and $0.05 \text{ mol L}^{-1} \text{ NH}_3$
D) $0.10 \text{ mol L}^{-1} \text{ HCl}$ and $0.20 \text{ mol L}^{-1} \text{ CH}_3\text{COOH}$
E) $0.10 \text{ mol L}^{-1} \text{ HCl}$ and $0.20 \text{ mol L}^{-1} \text{ NaCl}$

32. For a chemical reaction to be spontaneous at all temperatures, which of the following conditions must be met?

- A) $\Delta S^\circ > 0, \Delta H^\circ > 0$
B) $\Delta S^\circ > 0, \Delta H^\circ < 0$
C) $\Delta S^\circ < 0, \Delta H^\circ < 0$
D) $\Delta S^\circ < 0, \Delta H^\circ > 0$
E) It is not possible for a reaction to be spontaneous at all temperatures

33. How many unpaired electrons are there in Fe^{3+} ?

- A) 0
B) 2
C) 3
D) 4
E) 5

34. Which of the following is the best reducing agent?



- A) Cl_2
B) H_2
C) Mg
D) Mg^{2+}
E) Cl^-

35. Hydrogen-3 (tritium) and carbon-14 are β -emitters formed by cosmic radiation. To which element does carbon-14 decay?

- A) nitrogen-14
B) carbon-13
C) carbon-12
D) boron-14
E) silicon-14

※ 注意：1. 考生須在「彌封答案卷」上作答。

2. 本試題紙空白部份可當稿紙使用，試題須隨答案卷繳回。

3. 考生於作答時可否使用計算機、法典、字典或其他資料或工具，以簡章之規定為準。

科目：普通化學

系組：公共衛生學系

年級：二

36. Which of the following is the most significant factor in acid rain?

- A) CO
- B) CO₂
- C) NO
- D) SO₂
- E) SO₃

37. In the spectrochemical series, which one of the following ligands has the strongest field?

- A) H₂O
- B) CN⁻
- C) NH₃
- D) OH⁻
- E) Cl⁻

38. Which of the following will yield a carboxylic acid upon oxidation?

- A) a secondary alcohol
- B) an aldehyde
- C) a cycloalkane
- D) a ketone
- E) tertiary alcohol

39. Table sugar is a disaccharide formed from

- A) alpha-D-glucose and fructose
- B) beta-D-glucose and fructose
- C) D-galactose and D-ribose
- D) D-galactose and fructose
- E) none of these

40. Vegetable oils and fish oils differ from animal fats primarily in that the vegetable and fish oils contain more:

- A) carbon-carbon double bonds
- B) oxygen atoms
- C) glycerol units
- D) nitrogen atoms
- E) peptide bonds

※ 注意：1. 考生須在「彌封答案卷」上作答。

2. 本試題紙空白部份可當稿紙使用，試題須隨答案卷繳回。

3. 考生於作答時可否使用計算機、法典、字典或其他資料或工具，以簡章之規定為準。

科目：普通化學

系組：公共衛生學系

年級：二

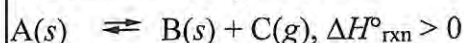
II、問答及計算題，每題五分。(20分)

1. The density of pure water at 25°C is 0.997 g/mL. Considering water as being both solvent and solute, calculate its molarity.
2. Ozone is a toxic, light-blue gas with pungent odor. Write formal charge and draw resonance structures for the ozone.
3. Suppose you wish to prepare a buffer solution to maintain the pH at 7.40. A list of possible acids (and their conjugate bases) is shown in the table

Acid	Conjugate Base	K_a
H_2PO_4^-	HPO_4^{2-}	6.2×10^{-8}
CH_3COOH	CH_3COO^-	1.8×10^{-5}
HCN	CN^-	4.0×10^{-10}

Which combination should be selected, and what should the ratio of acid to conjugate base?

4. Consider the equilibrium:



Predict and explain how or whether the following actions would affect this equilibrium.

- (A) increasing the temperature
- (B) increasing the pressure on the system by reducing its volume

※ 注意：1. 考生須在「彌封答案卷」上作答。

2. 本試題紙空白部份可當稿紙使用，試題須隨答案卷繳回。

3. 考生於作答時可否使用計算機、法典、字典或其他資料或工具，以簡章之規定為準。

科目：公共衛生學

系組：公共衛生學系

年級：三

一、選擇題 (每題3分，共60分)

1. 某篇研究以國家層次為單位進行分析，發現巧克力消費量高的國家，該國諾貝爾獎得獎的人數愈多。請問，該結論是否可推論，每個人吃越多巧克力越容易得到諾貝爾獎？(A)錯誤，因為各國資料正確性不同；(B)錯誤，可能會出現選擇性的偏差；(C)錯誤，可能會產生生態謬誤；(D)錯誤，可能會產生原子謬誤
2. 目前國家的公共政策規劃過程模式包括下列三種，當一個國家政策想推行一個新健康照護政策，而國民認知不足時，下列哪一模式較適合新政策的規劃？(A) 菁英理論模式 (B) 團體理論模式 (C) 民眾參與模式 (D) 以上皆非
3. 公共衛生人口研究方面，以人口金字塔綜合表示性別與年齡別結構，其中葫蘆型的金字塔結構，屬於下列那種型態？(A) 農村型 (B) 靜止型 (C) 減少型 (D) 都市型
4. 以下有關「醫藥分業」的敘述，何者不正確：(A) 醫藥分業可以保障民眾自由選擇藥品調劑場所的權利 (B) 醫藥分業由藥事專業人員負責調劑及藥物諮詢 (C) 醫藥分業可以健全藥品流通管理體系 (D) 醫藥分業由藥劑師專責開立處方
5. 依台灣現況評估，下列何項衛生指標將會逐漸上升？(A) 新生兒死亡率 (Neonatal Mortality Rate) (B) 孕產婦死亡率(Maternal Mortality Rate) (C) 粗死亡率(Crude Mortality Rate) (D) 嬰兒死亡率(Infant Mortality Rate)
6. 民國 106 年臺灣婦女總生育率已下降至多少，為世界各國最低生育率國家之一？(A) 0.83 (B) 0.95 (C) 1.13 (D) 1.22
7. 根據全民健康保險法的相關規定，保險人為促進預防醫學、落實轉診制度，並提升醫療品質與醫病關係，應訂定家庭責任醫師制度，家庭責任醫師制度給付的原則為何？(A) 論量計酬 (B) 論病例計酬 (C) 論人計酬 (D) 論質計酬
8. 目前有關結核病之防治及個案追蹤管理，在衛生福利部屬何單位業務？(A) 國民健康署 (B) 疾病管制署 (C) 醫事司 (D) 護理及健康照護司
9. 我國長期照顧之政府財源不包括以下何者項目？(A) 公務預算 (B) 贈與稅 (C) 酒稅 (D) 菸稅
10. 下列何者非水媒傳染病？(A) 霍亂 (B) 砂眼 (C) 傷寒 (D) 感染性肝炎 (E) 以上皆是水媒病
11. 為維護我國民眾健康，環保署除了發布即時空氣污染指標(PSI)，亦針對何種污染物提供即時監測指標？(A) O₃ (B) CO (C) SO₂ (D) PM_{2.5} (E) PM₁₀
12. 職業安全與衛生的目的是為了維護作業員工的健康，一旦掌握工作環境中的危害特性，而必須尋求解決方法時，應優先考慮工程改善。工程改善方法的原理不包括下列哪一項？(A) 局部排氣(通風) (B) 廠房整潔 (C) 濕式作業(濕潤) (D) 防護具的佩帶(個人防護) (E) 原料或設備製程之取代

※ 注意：1. 考生須在「彌封答案卷」上作答。

2. 本試題紙空白部份可當稿紙使用，試題須隨答案卷繳回。

3. 考生於作答時可否使用計算機、法典、字典或其他資料或工具，以簡章之規定為準。

科目：公共衛生學

系組：公共衛生學系

年級：三

13. 下列何者屬於非游離輻射？(A) 宇宙射線 (B) X 光射線(X ray) (C) 伽馬射線 (Gamma ray) (D) 紅外線(Infrared radiation) (E) 貝他粒子(beta particles)
14. 下列何者與空氣中微粒之氣動粒徑(aerodynamic diameter)無關？(A) 微粒之密度 (B) 微粒之大小 (C) 微粒之形狀 (D) 吸附於微粒上之化學物質 (E) 微粒之沉降速度
15. 全世界每年約有 100 萬人因工作傷害及疾病而死亡的案例，這些個案大概可分為「因慢性病而死亡」與「因工作相關的傷害而死亡」二類，下列何者不屬於「工作相關的傷害」？(A) 車禍 (B) 石綿肺症 (C) 墜落 (D) 電擊 (E) 機器設備相關意外
16. 學校衛生工作的演變過程中，健康促進學校計畫時期與傳統學校衛生計畫時期之工作重點有較大差異的是哪方面？(A) 提供健康服務 (B) 建立社區關係 (C) 加強健康教學 (D) 改善學校環境
17. 個人或社區經由社會行動的過程，獲得解決問題的能力，藉以掌控其生活環境，是屬於下列哪一概念？(A) 參與原則(Principle of Participation) (B) 增能賦權(Empowerment) (C) 社區能力(Community Capacity) (D) 自我效能(Self Efficacy)
18. 以下何者不屬於世界衛生組織(WHO)所提之「健康促進五大行動綱領」之內涵？(A) 強化社區行動 (B) 強化衛生教育 (C) 調整醫療服務方向 (D) 建置支持性的健康環境
19. DOTS(都治)是 WHO 所推廣針對哪一個疾病的哪一個行為問題而發展的方案？(A) 瘧疾的使用蚊帳 (B) 愛滋病的帶保險套 (C) 肺結核的服藥遵從性 (D) 腸病毒的洗手
20. 喚起民眾對新型流感的覺知(awareness)，下列何種方法最適宜：(A) 面對面溝通(face to face communication) (B) 焦點團體討論(focus group discussion) (C) 大眾傳播(mass communication) (D) 班級教學(class room teaching)

二、簡答題 (共 40 分)

1. 請分別說明健康及公共衛生的定義?(10%)
2. 1986 年，世界衛生組織提出「渥太華健康促進憲章」，提及健康促進的目的，是讓人們更有能力控制及改善其自身健康的過程。請詳細說明該憲章擬定哪五項行動綱領，作為健康促進的基礎？(15%)
3. 台灣目前正面臨人口老化的挑戰，2018 年台灣 65 歲以上老年人口比例達到 14%，正式邁入高齡化社會(aged society)，請問您覺得政府應如何規劃相關政策，以因應高齡化社會所產生的醫療需求及生活照護的問題？(15%)

※ 注意：1. 考生須在「彌封答案卷」上作答。

2. 本試題紙空白部份可當稿紙使用，試題須隨答案卷繳回。

3. 考生於作答時可否使用計算機、法典、字典或其他資料或工具，以簡章之規定為準。

科目：生物統計

系組：公共衛生學系

年級：三

一、新北市衛生局普查得知新北市男性居民之體重近似常態分佈，平均數為80公斤、標準差為8公斤。

1. 多少比例之新北市男性居民，其體重介於60-70公斤之間？(10分)
2. 當新北市衛生局對新北市男性居民進行隨機抽樣($n=16$)，請問樣本體重平均數介於75-85公斤的比例是多少？(10分)
3. 當新北市衛生局對新北市男性居民進行隨機抽樣($n=16$)，估計得知樣本體重平均數為70公斤。請依此估計新北市男性居民母群體體重平均數的95%信賴區間(10分)

二、電視節目「超級星光大道」最後決賽的結果如下：

參賽者	評審者		
	張宇	黃韻玲	袁惟仁
甲	4	5	4
乙	4	5	5
丙	3	3	3
丁	3	3	4
戊	5	4	5

1. 請問哪一位評審评分的變異最大？您是用什麼數據來判斷？(10分)
2. 若要進行三位評審者评分有無差異之統計甲說檢定的方法為何？(10分)
3. 本題之組間變異均方(between group mean square)為何？組內變異均方(within group mean square)為何？(20分)

三、研究人員針對新竹科學園區員工進行工作壓力(自變數)與睡眠時數(依變數)關聯性的調查。研究人員將工作壓力分為無壓力組、中等壓力組、高壓力組，並以虛擬變項(dummy variable)來處理工作壓力變項(以高壓力組為參考組)。研究人員以線性迴歸(linear regression)分析得到以下結果：

變項	迴歸係數	標準誤
截距	7.088	0.258
無壓力組	1.330	0.359
中等壓力組	0.707	0.359

1. 高壓力組的平均睡眠時數為何？(10分)
2. 無壓力組的平均睡眠時數為何？(10分)
3. 中等壓力組之平均睡眠時數相較於高壓力組之平均睡眠時數的差異為何？(10分)

※ 注意：1. 考生須在「彌封答案卷」上作答。

2. 本試題紙空白部份可當稿紙使用，試題須隨答案卷繳回。

3. 考生於作答時可否使用計算機、法典、字典或其他資料或工具，以簡章之規定為準。

科目：生物統計

系組：公共衛生學系

年級：三

標準常態分佈右尾之面積

z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.500	0.496	0.492	0.488	0.484	0.480	0.476	0.472	0.468	0.464
0.1	0.460	0.456	0.452	0.448	0.444	0.440	0.436	0.433	0.429	0.425
0.2	0.421	0.417	0.413	0.409	0.405	0.401	0.397	0.394	0.390	0.386
0.3	0.382	0.378	0.374	0.371	0.367	0.363	0.359	0.356	0.352	0.348
0.4	0.345	0.341	0.337	0.334	0.330	0.326	0.323	0.319	0.316	0.312
0.5	0.309	0.305	0.302	0.298	0.295	0.291	0.288	0.284	0.281	0.278
0.6	0.274	0.271	0.268	0.264	0.261	0.258	0.255	0.251	0.248	0.245
0.7	0.242	0.239	0.236	0.233	0.230	0.227	0.224	0.221	0.218	0.215
0.8	0.212	0.209	0.206	0.203	0.200	0.198	0.195	0.192	0.189	0.187
0.9	0.184	0.181	0.179	0.176	0.174	0.171	0.169	0.166	0.164	0.161
1.0	0.159	0.156	0.154	0.152	0.149	0.147	0.145	0.142	0.140	0.138
1.1	0.136	0.133	0.131	0.129	0.127	0.125	0.123	0.121	0.119	0.117
1.2	0.115	0.113	0.111	0.109	0.107	0.106	0.104	0.102	0.100	0.099
1.3	0.097	0.095	0.093	0.092	0.090	0.089	0.087	0.085	0.084	0.082
1.4	0.081	0.079	0.078	0.076	0.075	0.074	0.072	0.071	0.069	0.068
1.5	0.067	0.066	0.064	0.063	0.062	0.061	0.059	0.058	0.057	0.056
1.6	0.055	0.054	0.053	0.052	0.051	0.049	0.048	0.047	0.046	0.046
1.7	0.045	0.044	0.043	0.042	0.041	0.040	0.039	0.038	0.038	0.037
1.8	0.036	0.035	0.034	0.034	0.033	0.032	0.031	0.031	0.030	0.029
1.9	0.029	0.028	0.027	0.027	0.026	0.026	0.025	0.024	0.024	0.023
2.0	0.023	0.022	0.022	0.021	0.021	0.020	0.020	0.019	0.019	0.018
2.1	0.018	0.017	0.017	0.017	0.016	0.016	0.015	0.015	0.015	0.014
2.2	0.014	0.014	0.013	0.013	0.013	0.012	0.012	0.012	0.011	0.011
2.3	0.011	0.010	0.010	0.010	0.010	0.009	0.009	0.009	0.009	0.008
2.4	0.008	0.008	0.008	0.008	0.007	0.007	0.007	0.007	0.007	0.006
2.5	0.006	0.006	0.006	0.006	0.006	0.005	0.005	0.005	0.005	0.005
2.6	0.005	0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004
2.7	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
2.8	0.003	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
2.9	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.001	0.001	0.001
3.0	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
3.1	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
3.2	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
3.3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3.4	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

※ 注意：1. 考生須在「彌封答案卷」上作答。

2. 本試題紙空白部份可當稿紙使用，試題須隨答案卷繳回。

3. 考生於作答時可否使用計算機、法典、字典或其他資料或工具，以簡章之規定為準。